What is claimed is:

1. A microelectromechanical (MEM) module comprising:

a plurality of MEM device substrates, each of which includes at least one MEM device thereon;

a base substrate including a face; and

a mounting structure that is configured to mount the plurality of MEM device substrates on the face.

2. A MEM module according to Claim 1 wherein each of the MEM device substrates includes an array of M rows and N columns of MEM devices thereon and wherein the mounting structure is configured to mount the plurality of MEM device substrates in an array of R rows and S columns on the face to thereby provide a tiled array of M x R rows and N x S columns of the MEM devices in the MEM module.

3. A MEM module according to Claim 2 wherein the MEM devices comprise movable MEM mirrors.

4. A MEM module according to Claim 2 wherein the mounting structure comprises a plurality of solder bumps that are configured to mount the plurality of MEM device substrates on the face.

5. A MEM module according to Claim 4 wherein the MEM device substrate includes first and second opposing faces, wherein the at least one MEM device is adjacent the first face and remote from the second face and wherein the first faces of the MEM device substrates are adjacent the face of the base substrate.

6. A microelectromechanical (MEM) mirror module comprising:

a plurality of MEM mirror substrates, each of which includes a mirror comprising monocrystalline silicon, a frame comprising monocrystalline silicon that is spaced apart from and at least partially surrounds the mirror and at least two hinges between the mirror and the frame;

a base substrate including a face; and

a mounting structure that is configured to mount the frames of the plurality of MEM device substrates on the face.

7. A MEM mirror module according to Claim 6 wherein the frame is a first frame, each of the MEM mirror substrates also comprising an insulator layer on the first frame, opposite the mounting structure, and a second frame that is thicker than the first frame, on the insulator layer opposite the first frame.

8. A MEM mirror module according to Claim 6 wherein the mirror includes a pair of opposing faces and wherein each of the MEM mirror substrates further comprises a metal layer on each of the opposing faces of the mirrors.

9. A MEM mirror module according to Claim 8 wherein the mounting structure comprises a plurality of solder bumps that are configured to mount the plurality of MEM device substrates on the face.

10. A MEM mirror module according to Claim 9 wherein each of the MEM mirror substrates further comprises an underbump metallurgy between the frame and the solder bumps and wherein the underbump metallurgy and the metal layer on the MEM mirror substrate that is adjacent the base substrate both comprise a same metal.

11. A MEM mirror module according to Claim 6 wherein each of the MEM mirror substrates includes an array of M rows and N columns of MEM mirrors thereon and wherein the mounting structure is configured to mount the plurality of MEM mirror substrates in an array of R rows and S columns on the face to thereby provide a tiled array of M x R rows and N x S columns of the MEM mirrors in the MEM mirror module.

12. A method of fabricating a microelectromechanical (MEM) mirror module comprising:

providing a silicon-on-insulator substrate that includes a monocrystalline silicon layer on a bulk silicon substrate, with an insulator layer therebetween;

fabricating at least two spaced apart pads in the monocrystalline silicon layer that extend through the monocrystalline silicon layer to the insulator layer;

fabricating at least one hinge on each of the at least two spaced apart pads;

defining a mirror and a frame that at least partially surrounds the mirror, in the monocrystalline silicon layer, such that the hinges bridge the mirror and the frame; and

forming a metal layer on at least a portion of the mirror and at least a portion of the frame, opposite the insulator layer.

13. A method according to Claim 12 further comprising:

etching the bulk silicon substrate to expose the insulator layer adjacent the mirror and adjacent the pads; and

etching the insulator layer adjacent the mirror and the pads to release the mirror and the hinges.

14. A method according to Claim 13 wherein the metal layer is a first metal layer, the method further comprising:

forming a second metal layer on the mirror opposite the first metal layer.

15. A method according to Claim 14 further comprising:

mounting the silicon-on-insulator substrate on a base substrate, with the hinges and the first metal layer adjacent the base substrate and the second metal layer remote from the base substrate.

16. A method according to Claim 15 wherein the mounting comprises:

flip-chip mounting the silicon-on-insulator substrate on the base substrate using a plurality of solder bumps.

17. A method of fabricating a movable microeoectromechanical (MEM) structure comprising:

etching an array of features in a silicon substrate;

at least partially thermally oxidizing the array of features to form a pad comprising silicon dioxide in the silicon substrate;

forming a movable MEM structure on the pad; and

removing the pad to release the movable MEM structure.

18. A method according to Claim 17 wherein the etching comprises etching an array of features in a silicon layer on an insulator layer on a substrate.

19. A method according to Claim 17 wherein the features are between about 5μm and about 25μm thick.

20. A method according to Claim 18 wherein the removing comprises:

etching the substrate adjacent the pad;

etching the insulating layer adjacent the pad; and

etching the pad, from the insulating layer that was removed to the movable MEM structure.